Claims:

1. (Original) A method of operating a data communication apparatus comprising:

at each of a plurality of service specific transceivers:

receiving a plurality of input signals from a given plurality of data communications devices operating with a given data communication protocol;

aggregating each of said received plurality of input signals to result in a given service specific electrical signal;

transmitting said given service specific electrical signal to a wavelength access controller;

at said wavelength access controller:

receiving a plurality of service specific electrical signals from a plurality of service specific transceivers, at least two of said service specific transceivers operating with different data communication protocols;

converting said plurality of service specific electrical signals to a corresponding plurality of service specific optical signals;

wavelength division multiplexing said plurality of service specific optical signals to result in a wavelength division multiplexed signal; and

transmitting said wavelength division multiplexed signal over an optical conductor to an element of an optical transport network.

2. (Original) The method of claim 1 further comprising, at said wavelength access controller, classifying each of said plurality of service specific electrical signals.

3. (Original) The method of claim 1 further comprising maintaining, at said wavelength access

controller, a database of information relating to resources in said optical transport network.

4. (Currently Amended) The method of claim ~~2~~ 3 wherein said resources comprise wavelength channels between elements in said optical transport network.

5. (Original) The method of claim 3 further comprising

receiving a connection request from one of said plurality of service specific transceivers;

determining, based on said information in said database, a path through said transport network corresponding to said connection request, and

instructing said element of said optical transport network to set up said determined path through said transport network.

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6. (Original) The method of claim 1 further comprising, before said converting, including header information in each of said plurality of service specific electrical signals.

7. (Currently Amended) Data communication apparatus, comprising:

a ~~first~~ plurality of service specific transceivers, each transceiver of said plurality of service specific transceivers for:

receiving a plurality of input signals from a ~~first~~ given plurality of data communications devices operating with a ~~first~~ given data communication protocol;

aggregating each of said received plurality of input signals to result in a ~~first~~ given service specific electrical signal;

transmitting said ~~first~~ given service specific electrical signal to a wavelength access controller;

a wavelength access controller for:

receiving a plurality of service specific electrical signals from ~~a~~ said plurality of service specific transceivers, at least two of said service specific transceivers operating with different data communication protocols;

converting said plurality of service specific electrical signals to a corresponding plurality of service specific optical signals;

wavelength division multiplexing said plurality of service specific optical signals to result in a wavelength division multiplexed signal; and

transmitting said wavelength division multiplexed signal over an optical conductor to an element of an optical transport network.

8. (Currently Amended) Data communication apparatus, comprising:

a ~~first~~ plurality of service specific transceivers, each transceiver of said plurality of service specific transceivers comprising:

means for receiving a plurality of input signals from a ~~first~~ given plurality of data communications devices operating with a ~~first~~ given data communication protocol;

means for aggregating each of said received plurality of input signals to result in a ~~first~~ given service specific electrical signal;

means for transmitting said ~~first~~ given service specific electrical signal to a wavelength access controller;

a wavelength access controller comprising:

means for receiving a plurality of service specific electrical signals from ~~a~~ said plurality of service specific transceivers, at least two of said service specific transceivers operating with different data communication protocols;

means for converting said plurality of service specific electrical signals to a corresponding plurality of service specific optical signals;

means for wavelength division multiplexing said plurality of service specific optical signals to result in a wavelength division multiplexed signal; and

means for transmitting said wavelength division multiplexed signal over an optical conductor to an element of an optical transport network.

9. (Original) A computer readable medium for providing program control for a wavelength access controller in a wavelength access server, where said wavelength access server is communicatively coupled to both a plurality of service specific data communications devices and an element of an optical transport network, and said wavelength access controller is communicatively coupled to a plurality of service specific transceivers, said computer readable medium adapting said wavelength access controller to be operable to:

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classify a service specific electrical signal from each of said plurality of service specific transceivers;

maintain a database of information relating to resources in said optical transport network;

receive a connection request, from one of said plurality of service specific transceivers, for a path through said transport network;

determine, based on said information in said database, a path through said transport network corresponding to said connection request; and

signal said element of said optical transport network to set up said determined path through said transport network.

10. (Original) A method of operating a data communication apparatus comprising:

at a wavelength access controller:

receiving a wavelength division multiplexed signal over an optical conductor from an element of an optical transport network;

wavelength division de-multiplexing said wavelength division multiplexed signal to result in a plurality of service specific optical signals;

converting said plurality of service specific optical signals to a corresponding plurality of service specific electrical signals;

determining which of a plurality of service specific transceivers correspond to each of said plurality of service specific electrical signals;

transmitting each of said plurality of service specific electrical signals to a determined corresponding service specific transceiver;

at each of said plurality of service specific transceivers:

receiving a given service specific electrical signal from said wavelength access controller;

segmenting said given service specific electrical signal to result in a plurality of output signals; and

transmitting each of said plurality of output signals to a corresponding data communications device.

11 (Original) A data communication apparatus comprising:

a wavelength access controller comprising:

means for receiving a wavelength division multiplexed signal over an optical conductor from an element of an optical transport network;

means for wavelength division de-multiplexing said wavelength division multiplexed signal to result in a plurality of service specific optical signals;

means for converting said plurality of service specific optical signals to a corresponding plurality of service specific electrical signals;

means for determining which of a plurality of service specific transceivers correspond to each of said plurality of service specific electrical signals;

means for transmitting each of said plurality of service specific electrical signals to a determined corresponding service specific transceiver;

at each of said plurality of service specific transceivers:

means for receiving a given service specific electrical signal from said wavelength access controller;

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means for segmenting said given service specific electrical signal to result in a plurality of output signals; and

means for transmitting each of said plurality of output signals to a corresponding data communications device.

12. (Original) A data communication apparatus comprising:

a wavelength access controller for:

receiving a wavelength division multiplexed signal over an optical conductor from an element of an optical transport network;

wavelength division de-multiplexing said wavelength division multiplexed signal to result in a plurality of service specific optical signals;

converting said plurality of service specific optical signals to a corresponding plurality of service specific electrical signals;

determining which of a plurality of service specific transceivers correspond to each of said plurality of service specific electrical signals;

transmitting each of said plurality of service specific electrical signals to a determined corresponding service specific transceiver;

a service specific transceiver for:

receiving a given service specific electrical signal from said wavelength access controller;

segmenting said given service specific electrical signal to result in a plurality of output signals; and

transmitting each of said plurality of output signals to a corresponding data communications device.